

Comments
High Volume Chemical Water Column Monitoring QAPP Revision 0 (June 2012)

No.	Section/ Worksheet No.	Comment
1.	Introduction, page 1 of 7, "Group A parameters" subparagraph	(a) The Group A parameters subparagraph at the bottom of the page states "The resulting data will be used to estimate sorption partition coefficients under a range of conditions." The text should be revised to state that the "range of conditions" refers only to different salinity regimes. (b) Recommend moving the discussion of salinity regimes to the main text (above the Group A/B subparagraphs) since it applies to both the Group A and Group B parameters.
2.	Introduction, page 1 of 7, "Group B parameters" subparagraph	In the last line of the subparagraph, please revise wording to "collected continuously during the entire duration of the HV sampling."
3.	Introduction, page 2 of 7	In addition to salinity, temperature, specific conductivity, dissolved oxygen and pH, which the QAPP states will be recorded in the field, the following additional information is important for interpretation of results and should also be recorded at the time of sample collection: time of day and associated tidal cycle at sample collection, total water column depth, location of sample relative to navigational channel, and current and recent (last 48 hours) weather conditions, such as general wind direction and speed, and storms and/or other water-impact events (algal blooms, etc.).
4.	Introduction, page 2, paragraph 2	Add the language in quotes to the 2 nd paragraph on this page: HV water samples will ", initially," be collected during one planned sampling event when flows at Dundee Dam are between 400 and 3,000 cubic feet per second (cfs), "and the results will be evaluated to determine if additional rounds are warranted."
5.	Introduction, page 2 of 7, first line of 3 rd paragraph	Delete extraneous character "c."
6.	Introduction, page 2 of 7, 2 nd bullet	Add that the RM 4.2 location may be moved if flows at Dundee Dam are <1000 cfs. Also, consider re-ordering these bullets to present the locations from north to south.
7.	Introduction, page 4 of 7, last paragraph:	Revise sentence to include missing word: "The Passaic and Hackensack Rivers flow into NB from the north. <u>The</u> National Oceanic and Atmospheric Administration..."
8.	Introduction, page 6 of 7, Top two paragraphs	(a) Recommend that when using the words "better quality" or "improved" data that these terms are qualified (e.g., lower detection limits). (b) Briefly describe the partition coefficients currently being used and why these partition coefficients are inadequate and additional data are required.
9.	Worksheet 5	Please correct company name to "The Louis Berger Group, Inc." in the USEPA Oversight Contractor box.
10.	Worksheet 6, page 1 of 4	Consider adding coordination of oversight activities to the "Procedure" column.
11.	Worksheet 9, page 2 of 8	Please correct the following items: (a) AmyMarie Accardi-Dey's affiliation abbreviation should be "LBG", not "LBI". (b) AmyMarie Accardi-Dey's email address should be aaccardidey@louisberger.com . (c) Ed Garvey's affiliation should be "LBG", not "LBI".

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12.	Worksheet 9, page 3 of 8	In items 2 through 4, please revise "(LBI)" to "(LBG)".
13.	Worksheet 10	<p>(a) When discussing the calculation of partitioning coefficients, the QAPP should state that the coefficients to be developed will be site-specific and that the operationally-defined dissolved-phase concentration is expected to include contaminants bound to colloids, to the extent that this fraction is captured by the sorption medium (PUF).</p> <p>Note that the AECOM memo dated May 4, 2012 on the AP and Gravity Environmental studies performed with the PR-2900 and colloidal spikes showed that the PUF media and filters did not show good recovery for colloidal particulates of 0.1 um. If colloids (and their associated contaminant load) are not being captured by the PUF, then how will the partitioning coefficients be impacted (<i>i.e.</i>, contaminant mass passing through and not being accounted for in either the particulate-phase or dissolved-phase)?</p> <p>(b) Summarize how partition coefficients will be developed for each separate analyte (if so) and how the partition coefficients will be used to support the CFT model.</p> <p>(c) Describe how the SSC, DOC and POC data will be used in the partition coefficient calculations and how this will support improvements to the CFT model.</p>
14.	Worksheet 10, page 1	The "dissolved phase" is operationally defined for this sampling - this definition is somewhat different from that used in the CARP work (and potentially other studies whose data have been used to develop partition coefficients). Thus, differences in the definitions of the "dissolved" and "solid" phases should be considered when comparing and using partition coefficients calculated using the data from different studies.
15.	Worksheet 10, bullets at bottom of page 1	The bullets at the bottom of page 1 of Worksheet 10 should be revised to be consistent with the three goals of the HV CWCM program listed in the Introduction (page 6 of 7).
16.	Worksheet 11, General Comment	Throughout the QAPP, the vortex is described as a "centrifuge-like vortex" yet, in the associated SOP prepared by the developers of the PR-2900, no such description is provided. Since a centrifuge is a powered system and the vortex is not, the phrase "centrifuge-like" in the QAPP should be deleted throughout.
17.	Worksheet 11, page 1 of 5, Who will use the data?	In addition to the entities listed, please add the term "Partner Agencies" to this section, and then elsewhere in the document identify the included partners.
18.	Worksheet 11, page 1 of 5, What will the data be used for?	<p>(a) As part of this section, bullets 4 and 5 are limited to use of dissolved phase COPC for the human health and ecological risk assessments. However, both the dissolved and particulate phases of COPC concentrations in surface water may be useful for these assessments, unless technical justification otherwise is provided. Please include both for now, or include the justification not to.</p> <p>(b) Please revise "may be used" to "will be used" with regard to use of the data for risk assessment and bioaccumulation evaluations.</p>
19.	Worksheet 11, page 1 of 5, What types of data are needed, 1 st paragraph	State how the data will be reported. For example, will the solid-phase concentration be reported in contaminant mass per sampler, or per volume of water filtered, or per solids mass? Similarly, for the dissolved-phase concentration, will it be reported in contaminant mass per PUF or per volume of water filtered?

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20.	Worksheet 11, page 2 of 5, What types of data are needed, 3 rd bullet	The CPG stated during the “field demonstration lessons learned” conference call on 14 June 2012 that the LISST instrument data may not have correlated well with in-situ suspended solids concentrations, and that the SV-CWCM suspended solids data would be used to estimate volumes to be filtered during HV sampling. Revise LISST bullet to state only the current objectives of LISST measurements (<i>i.e.</i> , to guide filter changes).
21.	Worksheet 11, page 2 of 5, How much data are needed, 3 rd bullet	Please modify the third bullet as follows: “One round of sampling is anticipated <i>will initially be conducted</i> to fulfill the objectives of the HV sampling program. <i>The data will be submitted for rapid turnaround analysis (i.e., 30-day). The CPG will review and discuss the initial round of HV data with EPA, and additional sampling rounds will be conducted, if warranted.</i> ”
22.	Worksheet 11, page 2 of 5, What types of data are needed, 4 th bullet	(a) Please modify the 4 th bullet [“The total volume of water collected from each location will be recorded, as well as pump rate and sampling duration (start time and stop time)”] to include a statement that HV sampling will target the incoming tide as practical, per the CPG response to comment No. 9 (dated 3 July 2012, page 5 of 15). (b) State that flow rate will be monitored and recorded every 15 minutes.
23.	Worksheet 11, page 2 of 5, How much data are needed, 4 th bullet	Please modify the fourth bullet to state that the “four time-weighted composite samples of whole water for analyses of POC, DOC and SSC” will be collected together at the end of the HV sampling and final results averaged. Or, alternately, add a cross-reference to “Sampling Methodology” on page 4 of 5 of Worksheet 11.
24.	Worksheet 11, page 3 of 5, Where, when and how..., 1 st bullet	The QAPP states (Introduction, page 2 of 7) that HV sampling will occur between flow conditions of 400 cfs and 3,000 cfs; therefore, please remove the phrase “(when flows at Dundee Dam are < 250 cfs, this location will be moved upstream to RM 13.5)” regarding the RM 10.2 sampling location on Worksheet 11 (“Where, when and how...”, page 3 of 5).
25.	Worksheet 11, page 4 of 5, Sampling Methodology	Correct typo - “PBCs” should be “PCBs.
26.	Worksheet 11, page 4 of 5, Sampling Methodology	When the PUF media is first mentioned in Worksheet 11, please provide basic background on how the sorption medium works.
27.	Worksheet 11, page 5 of 5, How will the data be reported?	In addition to the 3 items listed (which address how the data were collected, deviations from work plan, and quality assurance of data/meeting project objectives), the data summary memorandum should include a summary of the HV surface water sample results, including sample summary tables providing dissolved and particulate contaminant concentrations for primary COPC, associated physical parameter results for each sample location, and sampling conditions. A map showing final sample locations should also be included.
28.	Worksheet 12, PCB and PCDD/F Analytical Groups, General Comment on PUF Matrix	In the Worksheet 12 header, the matrix is shown as “Solids (Sorption Media [PUF]);” However, the PUF is defined in the QAPP as capturing the dissolved phase of water column contaminants. Add clarifying footnote that the PUF is considered a solids sample from the laboratory’s perspective or change matrix to dissolved phase.

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29.	Worksheet 12, PCB and PCDD/F Analytical Groups, General Comment on PUF Matrix	There is no mention here of a second PUF cartridge and monitoring of potential breakthrough of contaminants on the PUF media. Per AECOM's conference call with USEPA on June 14, 2012, the dynamic and static spikes will be used to evaluate potential breakthrough. Specific details indicating exactly how loss of dynamic and/or static spikes will be attributed to breakthrough in the sampling device versus losses of the spike compounds during laboratory extraction, clean-up and analysis must be provided in the field and analytical SOPs. Language should also be added to Worksheet 12 indicating that analyte breakthrough will be monitored, the mechanism by which the monitoring will take place, and measurement performance criteria for any breakthrough detected/indicated.
30.	Worksheet 12, PCB and PCDD/F Analytical Groups, General Comment on PUF Matrix	What is the loading capacity of the PUF? Recommend including a quality control sample to demonstrate that material has sufficient capacity to mitigate breakthrough.
31.	Worksheet 12, PCB and PCDD/F Analytical Groups, General Comment on PE	<p>(a) PE samples are currently proposed for only the solid-phase. How will the solid-phase PE be analyzed? Will all of the method modifications be applied to the PE sample as is the case with the solid samples collected from the HV sampler? Clarify on Worksheets 31 and 32 that PE samples are currently only proposed for the solid-phase.</p> <p>(b) What are the supplier-certified limits for the solid-phase PE sample?</p> <p>(c) Please see comment 58. Recommend that PE be analyzed incorporating all modifications stated in the HV QAPP.</p> <p>(d) For the dissolved-phase, no PE samples have been currently proposed, only "QC Standards". Will all of the method modifications be applied to the QC Standards as is the case with the dissolved samples collected from the PUF sampler (<i>i.e.</i>, will the standards be spiked onto the PUF, extracted, and analyzed)?</p>
32.	Worksheet 12, PCB and PCDD/F Analytical Groups, General Comment on Field Duplicates	Criteria for acceptance for field duplicate pairs with concentrations less than 5 times the QL should be established.
33.	Worksheet 12, PCB and PCDD/F Analytical Groups, General Comment on Precision	It is understandable that samples cannot be split in the laboratory; however, some indication of laboratory precision should be included. Recommend including a laboratory control sample duplicate (LCSD) with each batch.
34.	Worksheet 12, PCB and PCDD/F Analytical Groups, General Comment	Based on the CPG PUF Comparison Memo (dated 4 May 2012; page 2), provide measurement performance criteria for extraction standards and alternate cleanup standards. These criteria should be consistent with the recovery stated in the CPG PUF Comparison Memo, that is (1) an average recovery of 80% for PCDD/F and 84% for PCB for the extraction standard, and (2) an average recovery of 73% for the PCDD/PCDF and 98% for the PCBs for the alternate cleanup standard. (Note that PCDD/F extraction recoveries should be consistent with corrective action implemented to minimize loss of PCDD/F during cleanup, refer to CPG PUF vs. XAD Comparison Memo, page 3, first paragraph.)

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35.	Worksheet 12, PCB Analytical Group (both Solids and PUF), pages 1-4 of 11	The measurement performance criteria for the PCB method blank should be consistent with those for the PCDD/F method blank on pages 5-8 of 11.
36.	Worksheet 12, PCB Analytical Group (both Solids and PUF), pages 1-4 of 11	Similar to the PCDD/F tables, add a QC Standard to the PCB measurement performance criteria. For both PCDD/F and PCB, provide a footnote clarifying what the QC Standard will be.
37.	Worksheet 12, PCB Analytical Group (both Solids and PUF), pages 1-4 of 11	Because of the limited quality assurance indicators available for the HV analysis, the measurement performance criterion of 50 percent difference relative to the ICAL for the batch control spike is too large. Recommend that measurement performance criteria be reduced to less than or equal to 40 percent difference.
38.	Worksheet 12, PCB Analytical Group (both Solids and PUF), pages 1-4 of 11	EML is not provided in Worksheet 15; therefore, in Worksheet 12 replace EML with either EDL or QL (or correct Worksheet 15 accordingly).
39.	Worksheet 12, PCB Analytical Group (PUF), page 4 of 11	The measurement performance criteria for the PCB static spike (50-150%) and dynamic spike (25-150%) are too large and may result in a large degree of correction of the dissolved-phase concentration to account for potential PUF inefficiencies and breakthrough. Based on the CPG PUF Comparison Memo (dated 4 May 2012, page 2), the PCB Static Spike and PCB Dynamic Spike had an average of 90% recovery. Consequently, please revise the measurement performance criteria to 75-125% recovery for both the static and dynamic spikes.
40.	Worksheet 12, PCDD/F Analytical Group (PUF), page 8 of 11	The measurement performance criterion for the PCDD/F dynamic spike is inconsistent. If the criterion is $\pm 30\%$ recovery, then the range should be 70-130%. Moreover, based on the CPG PUF Comparison Memo (dated 4 May 2012, page 2), the PCDD/F Static Spike and PCDD/F Dynamic Spike had an average of 90% recovery. Please modify both the static and dynamic spike criteria to 75-125% recovery.
41.	Worksheet 12, PCDD/F Analytical Group (PUF), page 5 and 7 of 11	For method blank, the measurement performance criteria listed do not relate to accuracy/bias contamination in all cases. Suggest revising the DQI phrase to encompass the measurement performance criteria.
42.	Worksheet 12, PCDD/F Analytical Group (PUF), page 6 and 8 of 11	For the "labeled compounds" measurement performance criteria, how are labeled compound EDLs used to assess sensitivity? Please explain by clarification of the language in the related boxes. After an explanation is provided, please provide details in the text as to why 2378-TCDD is an exception and what alternate criteria will be used for 2378-TCDD.

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43.	Worksheet 12, POC Analytical Group, page 9 of 11	<p>(a) Please clarify the text to indicate the difference(s) between the LFB and LCS quality control samples.</p> <p>(b) Please provide measurement performance criteria for field duplicate pairs with concentrations less than 10 times the QL.</p> <p>(c) Measurement performance criteria for POC are provided in units of mg/L; however, POC reference limits on Worksheet 15 are listed in units of mg/kg. Please correct unit discrepancy.</p> <p>(d) The measurement performance criteria for the LCS reads "95-105 percent recovery (%R) or within the manufacturer's control limits if > 95-105%R." It is not clear what ">95-105%R" means. Is it greater than 95% or greater than 105%? Please clarify.</p>
44.	Worksheet 12, DOC Analytical Group, page 10 of 11	The measurement performance criterion for the DOC LCS is inconsistent. If the criterion is $\pm 10\%$ recovery, then the range should be 90-110%. Please revise or explain the choice of 90-109% recovery.
45.	Worksheet 14, page 1 of 2, "Sampling Tasks", 2 nd paragraph and Worksheet 11, page 4 of 5, "Sampling Methodology"	<p>Per CPG Response-to-Comment No. 15, the addition of the 25 μm pre-filter should be added to the description of the filtering system. In addition, when discussing the components of the solid phase sample, the text should clearly state that the solid phase sample will include the vortex solids, the solids retained on the 25 μm pre-filter, and the solids retained on the 0.7 μm flat filters.</p> <p>Note that SOP 19 (PR-2900) states that the 25 μm pre-filter is considered optional. If this pre-filter is optional, what is the decision process for inserting the optional filter into the flow stream? How will the observation of neutrally-buoyant solids in the carboy be confirmed and acted upon?</p> <p>Is there a possibility for the 25 μm flat filter to be clogged and need replacement during the sampling event? If multiple 25 μm filters are needed, will it add to the potential for cumulative background contaminant concentrations? How will this be mitigated?</p>
46.	Worksheet 14, page 1 of 2, "Sampling Tasks", 4 th paragraph; also Worksheet 20	When describing the POC, DOC, and suspended solids samples, add text to describe that the four sub-samples from the carboy will be analyzed separately and reported as an average (refer to comment on Worksheet 11). This information should also be added to Worksheet 20, Footnote E. In the EDD (either in the comments field or uncertainty field), the error (1 sigma) associated with the average should be included.
47.	Worksheet 15, General Comment	Insert a footnote to discuss whether the determination of the achievable laboratory QL considered the potential blank contamination associated with the 0.7 μ m flat filters and the 25 μ m pre-filters. Note that as the number of filters used increases for each sample, the level of blank contamination will increase accordingly.
48.	Worksheet 15, General Comment	Worksheet 15 appears to have been developed for the particulate fraction only (note that Analytical Method Columns (pg/g) and end of table footnotes all relate to solids mass and TSS/SSC). An additional Worksheet 15 needs to be provided for the dissolved phase analyses conducted on PUFs.
49.	Worksheet 15, General Comment	Please add a footnote describing how the PALs and QLs for this QAPP were derived.
50.	Worksheet 15, General Comment on EDL for PCB and PCDD/F	Please clarify how the EDL values were derived. Indicate if all method modification and substrate material are represented and whether the EDL is an average of several trials or numbers derived from a single trial. Also indicate if laboratory background contaminants have been accounted for relative to the EDL values listed. Text should indicate that common PCB contaminants are not expected to be present at or above the EDLs listed for a given congener to substantiate the laboratory sensitivity goals provided in this Worksheet.

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51.	Worksheet 15, PCB Congeners, pages 1-9 of 15	<p>(a) Achievable QLs for PCB congeners appear to be inconsistent. Typically, the achievable QL will increase if two or more PCB congeners are co-eluting; however, for some co-eluting congeners, there is no increase in the achievable QL of 10 pg/sample (e.g., PCB 44 + PCB 47 + PCB 65). Please clarify.</p> <p>(b) The comparative values included in Worksheet 15 based on definitions provided (Footnote B) for Analytical Method QL and Achievable Lab QL do not seem to match. It is stated that the Analytical Method QL is based upon the published method QL adjusted for a 1 gram sample size. A 2 gram sample size is targeted for collection in this program, therefore the QL for pg/solid sample fraction if 2 grams of solid material are collected would be one half that of the Analytical Method QLs. For example, for PCB-208 the Analytical Method QL adjusted for 1 gram is 1000 pg/g while the Project QL is 10 pg/sample. If 2 grams of solids are collected for a given sample, the Analytical Method QL for PCB-208 will be 500 pg/solid in the whole water sample collected (values listed for EDLs are similarly impacted). The Worksheet requires revision and, at a minimum, clearly documented text describing exactly how the values in Worksheet 15 were developed.</p> <p>(c) Correct the typo in the PAL column header from "pictograms" to "picograms."</p>
52.	Worksheet 15, PCB Footnote C, page 10 of 15 and PCDD/F Footnote C, page 13 of 15	<p>(a) Footnote C states that the laboratory will report data in units of pg/sample. Will the final EDD contain both the laboratory reported value (pg/sample) and the CPG's converted values (pg/g and pg/L)?</p> <p>(b) Co-eluting PCB congeners should be clearly established for a given lab and given instrumentation. Please provide an explanation as to why shifting co-elutions are an anticipated variable. Chromatographic resolution must be strictly controlled within the analytical system. Differences among labs due to differences in instrumentation may be expected but elution of congeners must be consistent for a given lab and instrumentation.</p> <p>(c) Footnote C, last sentence of first paragraph: "Not applicable" would be a more accurate definition for NA instead of "not available."</p>
53.	Worksheet 16	Revise schedule as appropriate.
54.	Worksheet 17	Additional information on the sampling design and rationale is provided elsewhere in the QAPP such as Worksheet 14. Suggest adding a reference to Worksheet 14.
55.	Worksheet 18	Please re-order the sampling locations from north to south for ease of reference. Clarify why sampling depth is described as "one-three feet from bottom," instead of 3 feet above the bottom. Also, to have a fixed sampling point during sample collection, state how the tubing will be managed (i.e., will sample collection be similar to the SV-CWCM program where the tubing was affixed to the water quality probe?).
56.	Worksheet 19	In regards to the PUF holding time of one year frozen, have the implications with regards to PUF sorbent material performance when frozen and defrosted been evaluated?
57.	Worksheet 20, Footnote C and SOP SW-19, page 9	<p>(a) Clarify when the equipment rinsate blank will be collected during the sampling effort. The equipment rinsate blank should be collected between sampling locations, after equipment has been decontaminated.</p> <p>(b) State how the equipment rinsate blank will be collected and what volume of water will be filtered through the system for the equipment rinsate blank.</p> <p>(c) In SOP SW-19, Page 9, First paragraph, Item No. 2, when referring to the equipment blank, the same volume of analyte-free water should be pumped through the system as is anticipated for the surface water samples themselves, thereby mimicking sample exposure times for the control blank. One hundred seventy-five (175) liters is currently the smallest surface water sample volume planned. The stated 40 liters for equipment blank collection is not sufficient.</p>

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58.	Worksheets 20 and 32	These sheets says, "If the HV CWCM program occurs within six months of the LRC SSP and RM 10.9 supplemental programs and the same laboratories will be used for the LRC SSP and RM 10.9 supplemental program analyses, a pre-program PE study will not be performed prior to the HV CWCM program." The PUF is a new matrix and due to the fact that the use of a PUF to extract dissolved organics has not yet been used during the previous studies. It would be prudent to run an aqueous PE sample through the PR2900 with filter and PUF in line to help evaluate the system's capability to extract know concentrations of dissolved PCBs and dioxins. A means to testing the effectiveness of the analysis of the filter using a PE would also be helpful but such a mechanism may not be possible with the available. In general, since the analytical methods and sampling techniques used in earlier programs are significantly modified in the high volume program, the accuracy and limitations of the data obtained will not be understood
59.	Worksheet 21, page 2 of 2, Footnote A, item 2	Clarify the volume of the carboy itself; volume sizes of 15L and 20L are used interchangeably throughout the QAPP. During the field demonstration, the carboy was described as a 20L carboy, and we understand that the intention is to capture 15L of sample within the 20L carboy during the duration of the HV sampling at each location.
60.	Worksheet 21, page 2 of 2, Footnote A, item 4	When discussing the field duplicate for the POC, DOC, and suspended solids samples, clarify whether the field duplicate will come from the same carboy as the parent sample or if the field duplicate will come from the carboy associated with the "co-locate" PR-2900 unit.
61.	Worksheet 21, page 2 of 2, Footnote B	Per the 14 June conference call with the CPG, the LISST will be used to monitor suspended solids concentration but will not be used to adjust flow rates; these discussion points should be added to the SOP and QAPP. What are the advantages and disadvantages of deploying the LISST near the sonde vs. in-line, prior to the carboy?
62.	Worksheet 22	The PR-2900 should be added to Worksheet 22.
63.	Worksheet 23	For clarity, state that solid-phase sample will be one 8 oz jar consisting of the vortex separator water, the 25 um filter(s), and the 0.7 um filter(s). Moreover, the laboratory will handle this sample by adding a coagulant (Hydromatrix manufactured by Agilent Technologies, Inc.) and analyzing the sample as a solid in a Dean-Stark extractor. The PCB and PCDD/F fractions will be separated on-column.
64.	Worksheet 23	Method modifications will be necessary to accomplish analysis of solid phase and dissolved phase samples collected from the PR-2900 (e.g., simultaneous co-extraction of PCDD/F and PCB congeners, modified spiking solutions and spiking protocols). The required modifications must be delineated here and also listed as stepwise procedures in the Analytical SOP Addendum.
65.	Worksheet 27, bottom of page 1 of 4	During the SV-CWCM, the sample ID was distinguished with "A" for the top sample and "B" for the bottom sample. If HV samples are to be collected 3 feet from the bottom, then sample IDs should use a "B" to represent the bottom sample, to be consistent with the SV-CWCM naming convention.
66.	Worksheet 28, General Comment	Worksheet 12 comments also apply to Worksheet 28. Please correct/revise accordingly.
67.	Worksheet 28, General Comment	How many equipment rinsate blanks are expected to be collected during a single sampling event (6 stations) at the described rate of 1 per week per team? Please discuss if more than one blank is needed per event to address difficulties in equipment decontamination described by the CPG.

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68.	Worksheet 28, General Comment for PCB and PCDD/F on Re-extraction as a Corrective Action	<p>(a) Many corrective actions in this Worksheet indicate the re-extraction of samples when the QC criteria are not met. Due to limitations in the sample collection design, sample mass (particulate) and PUF (dissolved) material will not be available to re-extract. Remove "re-extraction" from corrective action options, or clarify whether a portion of the original extract will be archived in case a re-analysis is required.</p> <p>(b) Define the "B" qualifier in relationship to the QAPP, define what concentration is statistically significant relative to a sample, and recognize that there may be no sample available to re-extract.</p>
69.	Worksheet 28, PCB Static Spike and Dynamic Spike (page 4 of 15) and PCDD/F Static Spike and Dynamic Spike (page 9 of 15)	Corrective action of NA (not applicable) for the PCB and PCDD/F static spike and dynamic spike is not appropriate. Details for monitoring of potential breakthrough should be provided since the recovery of the static spike and dynamic spike will impact quantification of the dissolved phase.
70.	Worksheet 30	Data package turnaround time for PCBs and PCDD/PCDFs is shown as 45-60 days 45 days and 45 days, respectively. However, the Introduction, page 2 of 7, "samples will be sent to the laboratory for rapid analysis and turnaround (i.e., 30-day)." Although the footnote b of Worksheet 30 states the TAT is 30 days for the first event the table is a bit misleading.
71.	Worksheet 32, page 4 of 4	See previous comments on the need to conduct a PE study.
72.	Worksheet 36	Due to the modifications to the analytical procedures as a result of the HV sampling protocols, direct use of the USEPA Region 2 validation guidance may be limited in application. Project-specific validation protocols should be developed in advance to limit debate on the professional judgment that will need to be applied.
73.	Worksheet 37, General Comments	<p>(a) Worksheet 37 should clearly state that unit conversions will be completed on recovery corrected data.</p> <p>(b) How will qualified data be handled in the proposed unit conversions presented in Worksheet 37?</p> <p>(c) Clarify how the four time-integrated POC, DOC, and suspended solids samples will be incorporated into the unit conversion calculations. Suggest including this information on Worksheets 14 and 17 as well.</p>
74.	Worksheet 37, page 1 of 4, "Describe the evaluative procedures"	First paragraph (fifth line down) - "...or as the users..." seems to be stray text.
75.	Analytical SOP No. AP-CM-13 DF High Volume Sampling Addendum	<p>The SOP provides a few limited details regarding modifications to the base procedure which is SOP No. AP-CM-5 Rev.15, in order to accommodate samples for Dioxin/Furan analysis when collected from the PR2900 sampling equipment. Note the base procedure (SOP AP-CM-5) is similar to USEPA 1613B but includes modifications to the USEPA method. The limited details in the high volume addendum are related to three new categories of carbon-labeled spiking mixtures, namely the dynamic standard field spike (DS), static standard (SS), and an alternate cleanup standard (AS). Please provide additional detail by expanding text in the SOP to fully describe all stepwise procedures planned.</p> <p>The following items are not covered in the SOP and should be addressed:</p> <p>i. Description of necessary adjustments to the remaining analytical carbon-labeled spike mixtures. For example, standards included in the new high volume specific</p>

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		<p>mixtures must be removed from the "extraction standard." As written, neither the base SOP nor the HV Addendum DF are clear or defined regarding the spiking protocols to be carried out by the bench chemist at the lab or by the field crew.</p> <ul style="list-style-type: none"> ii. No text is provided to describe how samples will be stored at < -10 degrees Celsius at the lab or how/if they will be brought to ambient temperature prior to extraction. This is the temperature requirement identified in the QAPP. The current SOP indicates "samples are stored at 4 degrees Celsius, extracted within 30 days and completely analyzed within 45 days." This holding time and storage temperature is in conflict with QAPP Worksheet #19. iii. No text has been provided in the HVS Addendum DF regarding sample handling of the particulate phase samples collected. How will the solid material be transferred quantitatively to the Soxhlet Dean Stark (SDS) apparatus, assuming the entire contents of the sample will be extracted? Currently the base procedure indicates a 10 gram sample will be sub-sampled from the field container. When will Hydromatrix be added, etc.? Definition of these steps will be especially important since the particulate phase sample will be a combination of several filters and material from the vortex. iv. Current documentation (QAPP, field and lab SOPs) indicate that only one PUF cartridge will be collected per sample location. Air sampling protocols commonly include two serial PUFs. The second PUF is used to monitor/capture breakthrough of analytes in the sampling system. Per AECOM's conference call with USEPA on June 14, 2012, the dynamic and static spikes will be used to evaluate potential breakthrough. Specific details indicating exactly how loss of dynamic and/or static spikes will be attributed to breakthrough in the sampling device versus losses of the spike compounds during laboratory extraction, clean-up and analysis must be provided in the field and analytical SOPs. This is particularly important aspect in the monitoring of the overall field sample collection and analytical performance since the preliminary field trial of the HV sampling equipment yielded low recoveries of nearly all HOCs in the colloidal dynamic spike (representing dissolved phase analytes). These phenomena may be related to breakthrough. v. If the entire contents of the particulate sample container (filters and vortex contents) are to be analyzed for dioxin/furans and congener PCBs as one aliquot rather than separate 10 gram sub-samples as currently indicated in the SOP, the same issues regarding the combined extraction and analysis of dioxin/furans and congener PCBs must be addressed in a thorough stepwise SOP as requested in the bullet above for the PUF. vi. Calculations are not provided describing exactly how results for particulate and dissolved phase analyte concentrations will be determined based upon other measurements such as total volume of water collected and SSC. The calculation and result reporting steps of this program are unique and must be included in the laboratory SOP.
76.	<p>Analytical SOP</p> <p>No. AP-CM-14 Rev. 1 DF, PCB High Volume Sampling Addendum</p>	<p>The SOP provides limited details regarding modifications to the base procedure which is SOP No. AP-CM-7 Rev.9-1, in order to accommodate samples for Congener PCB analysis when collected from the PR2900 sampling equipment. Note the base procedure (SOP AP-CM-7) is similar to USEPA 1668 but includes modifications to the USEPA method. The limited details in the high volume addendum are related to three new categories of carbon labeled spiking mixtures, namely the dynamic standard field spike (DS), static standard (SS), and an alternate cleanup standard (AS). Please provide additional detail by expanding text in the SOP to fully describe all stepwise procedures planned.</p>

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		<p>The following items are not covered in the SOP and should be addressed:</p> <ul style="list-style-type: none"> i. Description of necessary adjustments to the remaining analytical carbon-labeled spike mixtures. For example, standards included in the new high volume specific mixtures must be removed from the "extraction standard." As written, neither the base SOP nor the HV Addendum PCB are clear or defined regarding the spiking protocols to be carried out by the bench chemist at the lab or by the field crew. ii. The introductory text of the HVS Addendum PCB includes the following: <i>This procedure creates multi-component samples analogous to air samples; the extraction of these samples follows the same air extraction procedures used when no split or archive is required (See section 14.1.6 of SOP AP-CM-7, Revision 9-1.</i> <p>No further description or directives are provided in the HVS Addendum PCB related to the creation of multi-component samples. Further, the base procedure SOP No. AP-CM-7 Rev.9-1 does not provide explicit details regarding the creation of multi-component samples. If the lab's term "multi-component sample" refers to the analysis of PCBs in conjunction with dioxin/furans, the base SOP No. AP-CM-7 Rev.9-1 indicates that "custom-made charts are used to help with the description of spike profiles, the sample handling and extractions" on a project specific basis only, and therefore are not included in the base SOP. These steps (if intended) are critical to the analyses of the high volume samples and must be provided in a thorough step-wise SOP.</p> <ul style="list-style-type: none"> iii. No text is provided to describe how samples will be stored at <-10 degrees Celsius at the lab or how/if they will be brought to ambient temperature prior to extraction. This is the protocol identified in the QAPP. Current SOP indicates "store solid, semi-solid, oily, and mixed-phase samples in the dark at 2-6 degrees Celsius," and samples stored at 4-6 degrees Celsius, are extracted within 30 days. Both the holding time and storage temperature are in conflict with QAPP Worksheet #19. iv. No text has been provided in the HVS Addendum PCB regarding sample handling of the particulate phase samples collected. How will the solid material be transferred quantitatively to the Soxhlet Dean Stark (SDS), assuming the entire contents of the sample will be extracted? Currently the base procedure indicates a 10-20 gram dry weight equivalent sample will be sub-sampled from the field container. When will Hydromatrix be added, etc.? Definition of these steps will be especially important since the particulate phase sample will be a combination of several filters and material from the vortex. v. Current documentation (QAPP, field and lab SOPs) indicates that only one PUF cartridge will be collected per sample location. Air sampling protocols commonly include two serial PUFs. The second PUF is used to monitor/capture breakthrough of analytes in the sampling system. Per AECOM's conference call with USEPA on June 14, 2012, the dynamic and static spikes will be used to evaluate potential breakthrough. Specific details indicating exactly how loss of dynamic and/or static spikes will be attributed to breakthrough in the sampling device versus losses of the spike compounds during laboratory extraction, clean-up and analysis must be provided in the field and analytical SOPs. This is particularly important since the preliminary field trial of the HV sampling equipment yielded low recoveries of nearly all HOCs in the colloidal dynamic spike (representing dissolved phase
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		<p>analytes). These phenomena may be related to breakthrough.</p> <p>vi. If a single PUF is collected, how will analyses of both dioxins/furans and congener PCBs be performed? Assuming a co-extraction, combined carbon label spiking protocol, possible split of extract, separate or combined analyses of extracts would be necessary, to provide for analysis of all HOCs from one PUF. None of these steps, issues, or even a planned approach in general are provided for in the HVS Addendum PCB. Please explain exactly what the planned approach to the single PUF analysis for dioxin/furans and congener PCBs will be, and provide a thorough stepwise SOP to document the planned procedure.</p> <p>vii. If the entire contents of the particulate sample container (filters and vortex contents) are to be analyzed for dioxin/furans and congener PCBs as one aliquot rather than separate 10 gram sub-samples as currently indicated in the SOP, the same issues regarding the combined extraction and analysis of dioxin/furans and congener PCBs must be addressed in a thorough stepwise SOP as requested in the bullet above for the PUF.</p> <p>viii. Calculations are not provided describing exactly how results for particulate and dissolved phase analyte concentrations will be determined based upon other measurements such as total volume of water collected and SSC. The calculation and result reporting steps of this program are unique and must be included in the laboratory SOP.</p>
77.	Analytical SOP C-16, Rev.01	The SOP does not include determinative analytical steps, nor is a companion SOP included that delineates determinative steps (e.g., instrument calibration, sample concentration calculations, etc.). The SOP therefore is incomplete.
78.	SOP SW-19, Editorial Comments	<p>(a) Please correct typo in the first sentence of page 1; GFF is to be a 0.7 um filter (not a 7 um).</p> <p>(b) In first sentence of second paragraph on page 1, please delete the word "samples" and remove the analyte "pesticides" from the list of targeted organics for the HV-CWCM program.</p> <p>(c) In the first sentence of the third paragraph on page 1, suggest re-wording to "Sampling <i>small volumes of unfiltered</i> water for HOCs may yield <i>concentrations</i> quantities too low to be detected...."</p> <p>(d) In the fourth paragraph on page 1, add a closed parentheses after the phrase "Trace Metals" on the second line.</p> <p>(e) In the fourth paragraph on page 1, remove the word "also" from the sentence "Water samples will also be analyzed for organic compounds and conventional parameters..."</p> <p>(f) In the first paragraph on page 2, please revise the wording to avoid suggesting that the PR-2900 is primarily a pump (second line).</p> <p>(g) On page 4, just above the "Sample Handling" section, add a sentence stating that intermittent filter changes will be required prior to filtering the entire desired volume.</p> <p>(h) In Attachment #2 (and throughout the QAPP), consider listing locations from North to South, beginning with Dundee Dam and ending with the Kill Van Kull, for ease of reference.</p>
79.	SOP SW-19, page 3, paragraph 1	How will the pump outflow be checked during sampling? Will the tubing be disconnected before the vortex?
80.	SOP SW-19, page 4, paragraph 2	Provide rationale on why the dynamic spike is added after half the desired volume is filtered. The spike should be added at the beginning of the filtration process, or a "wash-out" spike should be added at the beginning of the filtration process.
81.	SOP SW-19, page 8, Step No. 6	For clarity, state that the water from the vortex separator will be added to the same 8 oz jar as the 0.7 um and 25 um flat filters.
82.	SOP SW-19, page 7, Step No. 8	Specify where the weight will be located in relation to the instrument array and tubing inlet.

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83.	SOP SW-19, page 8, Step No. 10	When discussing the transfer of the vortex separator sample to the 8 oz jar, explain how residual particulate sample volume/mass remaining in the vortex separator upon completion of all sample collection steps will be quantitatively transferred to the particulate phase sample container.
84.	SOP SW-19, page 9, paragraph 1, Item No. 1	"Talex" water should be defined as to the meaning, quality, and source as it is not an industry or government standard specification.
85.	SOP SW-19, page 9 "Decontamination" Item No. 5	Clarify what type or quality of "water" will be used in this step. Also, to avoid confusion, write-out deionized water instead of using the acronym DI.
86.	SOP SW-19, page 10, Item No. 11	Clarify whether the filtering system is allowed to air-dry prior to securing the system with aluminum foil.
87.	SOP LPR-FI-04, Section 1.1 and elsewhere	Revise SOP LPR-FI-04 since phrases such as "High-volume sampling techniques are beyond the scope of this SOP" (Section 1.1) are still present.
88.	SOP LPR-FI-05 Section 5.3.2, page 3, paragraph 2	Will there be any measurements recorded manually in the event that the data logging file is corrupted or does not log?
89.	SOP LPR-FI-06, Section 1.2	The SOP states: "Use of this SOP is restricted to metals, including but not limited to low-level mercury, methylmercury and hexavalent chromium." This SOP needs to be revised to address other analytes of interest for this HV CWCM program.
90.	SOP LPR G-01, page 2, Section 4.0	The camera should not be listed as an optional piece of equipment.
91.	SOP LPR-G-02 page 1, Section 3.0	Include statement that bad weather/overcast conditions can also cause interferences/poor satellite coverage.
92.	PUF vs. XAD Comparison, page 1, paragraph 2	For clarity, state that PCB and PCDD/F were co-extracted and fractionated on-column.
93.	PUF vs. XAD Comparison, page 1, paragraph 2	Regarding methanol used to deliver the dynamic spike, could this interfere with recovery efficiency on the PUF or XAD? Could constituents sorbed on dissolved organic matter be less/more readily captured on XAD/PUF when introduced in a methanolic mixture?
94.	PUF vs. XAD Comparison, page 1, paragraph 2	If this is intended to "...verify that, in a controlled laboratory environment using large volumes of clean water, the combined sampling-analytical system could produce acceptable recoveries..." then the laboratory study needs to mimic the real-world application or the test may be invalid. In the study, only 50 liters were filtered while field work will require the filtration of hundreds of liters.
95.	PUF vs. XAD Comparison, page 2, Paragraph 2	Paragraph starting "The overall methanolic DS average recovery..." (a) Describe corrective action that will be implemented in the field to ensure that the PR-2900 is adequately decontaminated prior to sampling and between locations. (b) Fourth sentence: How will the native PCB recoveries that were not usable be dealt with during field use and re-use? Where was the background PCB source from in previous runs? Can it be confirmed that there were no other constituents in the previous runs that could have been background contaminants? (c) Seventh sentence: This sentence is unclear. Was it in the previous runs that caused background contamination or was it in the background analytical results?
96.	PUF vs. XAD Comparison, page 2, paragraph 2	When stating that the XAD efficiency is 78%, the amount of XAD resin used in the comparison should be provided.

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97.	PUF vs. XAD Comparison, page 3, paragraph 2	(a) Third sentence: What does the poor recovery of the colloidal dynamic spike suggest about the ability of this system to identify/quantify analytes specific to the apparent dissolved versus solid phase of the water column? (b) Fourth sentence: Was the spike trapped by the filter and the vortex or just the filter? (c) Last sentence: What is the relevance to the target constituents in the media sampled? Could the solids have been captured but not detected by the lab instruments/analytical method?
98.	PUF vs. XAD Comparison, page 3, paragraph 1	Describe the corrective action that will be implemented in the laboratory to minimize loss of PCDD/F extraction standard during cleanup.
99.	PUF vs. XAD Comparison, page 3, 2nd summary bullet	Can any mitigation steps be implemented to account for the loss of mass associated with the colloidal phase (which passes through the PUF and is not accounted for)?
100.	PUF vs. XAD Comparison, Appendix 1, page 17	Specific to the PCDD/PCDF recoveries table, the ¹³ C ₁₂ -OCDD recovery is 832.0. Is there a possibility this is a typographical error? Address as necessary.
Comments on CPGs Response to Comments on Worksheets #9, 10, 11, 17		
101.	General Comment 2, page 1 of 15	<p>The SOPs are incorporated into the draft QAPP but analytical SOP Nos. AP-CM5 and AP-CM-7 still do not clearly describe the extraction procedures to be used for the PUF and filter/vortex rinse matrices that will be produced from this sampling event. The extraction processes described in the SOPs are cobbled together from the air sampling and apparently the tissue extraction procedures previously submitted. For example, the extraction procedure that will presumably be used for the PUF discusses combining XAD-2 resin and filter in a SDS extractor. This is a small detail since in the introduction to the section it is stated that "Each sampling is usually comprised of a filter, a XAD-2 resin trap, solvent rinses..." where the term "usually" may cover the case were XAD resin is not used. Yet it can lead to confusion in the extraction process. Additionally the tissue extraction that presumably we be used to extract the filters/vortex rinse describes adding 20-25 grams of Hydromatrix TM and "stir until a dry, free flowing consistency is achieved". Is this to be done in the sample jar before or after the filters are removed? These are unique matrices not PUFs from air sampling and certainly not a tissue or soil/sediment matrix. In the case of the filters there will be multiple filters along with the vortex rinse to transfer and extract.</p> <p>In order to evaluate the extraction procedure that will be used to process the PUF and filter /vortex rinse and to insure that the split samples are handled in a consistent manner the laboratory must provide a detailed transfer and extraction procedure for both the PUF and filter/vortex rinse matrices not simply try to work them into an existing extraction procedure.</p>
102.	Comment 13, page 6 of 15	The SOPs did not adequately address this comment. See review of General Comment 2 above. Specific extraction procedures for HV water sampling PUFs and filters/vortex rinse need to be added to the analytical SOPs.
103.	Comment 14, page 6 of 15	The SOP addenda contain the information requested, but data quality criteria are normally included on QAPP Worksheets and note that the quality control criteria in the referenced lab SOPs. The SOP addenda contain this information.
104.	Comment 18, page 8 of 15	Related to this comment – the CPG has not provided the data related to the field test. The field test analytical data would help better evaluate the CPGs response to this comment. It would also provide some insight into the analytical process and potential challenges that might be encountered.

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105	Comment 20, page 9 of 15	The PUF vs. XAD study indicated that the PR-2900 system had an issue with PCB contamination. Please clarify if the PR2900 system used for this study was decontaminated following the procedure described in the Gravity SOP.
106	Comment 23, page 9 of 15	The revisions to the analytical Perspectives SOP do not adequately address the question regarding the analysis of the filters and vortex rinse. The handling and extraction of the portion of the SOPs need to be greatly enhanced
107	Comment 5, page 12 of 15	Analytical SOP for Dioxins/Furans: The CPG response for comments b, d & f do not adequately address the comments. Analytical Perspectives SOPs do not adequately describe the handling and extraction procedures for PUFs use for high volume water sampling or the filter/vortex rinse matrices.
108	Comment 6, page 13 of 15	Analytical SOP for Congener PCBs: The CPG response to comments b, d & f do not adequately address the comments. Analytical Perspectives SOPs do not describe the sample handling and extraction procedures for the PUFs used for high volume water sampling and filter/vortex rinse matrices
109	Comment 13, page 15 of 15	Recommend that the response to this comment be added to the QAPP: "Each filter will be packaged separately during the HV sampling, minimizing exposure of the unused filters to ambient conditions. Filter changes will be conducted as efficiently as possible, minimizing ambient exposure."